WHAT IS CLAIMED IS:

1. A secondary battery having a negative pole substantially made of a negative pole activating material, a positive pole substantially made of a negative pole activating material disposed while interposing a separator from said negative pole and an electrolyte or an electrolytic solution (electrolytic liquid) held between said negative pole and said positive pole, said secondary battery comprising:

a film which covers the surface of said negative pole and through which ions relating to battery reactions are able to pass.

2. A secondary battery according to claim 1, wherein said film has a molecular structure or apertures having gaps larger than the ions relating to said battery reactions.

3. A secondary battery according to claim 1, wherein said film has a molecular structure or apertures through which the ions relating to said battery reactions are able to pass but through which a negative pole activating material precipitated to said negative pole at the time of charge cannot pass.

4. A secondary battery according to claim 1, wherein said film is stable such that said film does not

react with said electrolyte or said electrolytic solution and said film cannot be dissolved by the same.

5. A secondary battery according to claim 1, wherein said film has an electron donative element or a group.

6. A secondary battery according to claim 5, wherein said electron donative element of said film has an unpaired electron, a paired electron or electron d.

7. A secondary battery according to claim 5, wherein said electron donative group of said film has electron π.

8. A secondary battery according to claim 5 or 6, wherein said electron denative element of said film has one or more types of elements selected from a group consisting of oxygen, nitrogen and sulfur.

9. A secondary battery according to claim 1, wherein said film is in the form of a large ring compound structure.

10. A secondary battery according to claim 1, wherein said film is in the form of an aromatic ring structure.

11. A secondary battery according to claim 1, wherein said film is fluororesin.

12. A secondary battery according to claim 1, wherein said film is in the form of an ether bond structure.

13. A secondary battery according to claim 1, wherein said film has a carbonyl group.

14. A secondary battery according to claim 1, wherein said film is in the form of a structure in which phosphorus atoms and nitrogen atoms are alternately double-bonded in a phosphorus-nitrogen manner.

15. A secondary battery according to claim 1, wherein said film is made of a glass-type metal oxide.

16. A secondary battery according to claim 1, wherein said film has a polymer structure.

17. A secondary battery according to claim 1, wherein said film has a crosslinked polymer structure.

18. A secondary battery according to claim 1, wherein said film includes conductor powder dispersed therein.

19. A secondary battery according to claim 1, wherein said negative pole activating material is lithium or lithium alloy.

20. A secondary battery according to claim 1, wherein said negative pole activating material is zinc or zinc alloy.

21. A secondary battery according to claim 19, wherein said surface of said negative pole covered with said film is subjected to lipophilic treatment.

22. A secondary battery according to claim 20, wherein said surface of said negative pole covered with said film is subjected to hydrophilic treatment.

23. A secondary battery according to claim 1, wherein at least the surface of said separator opposing said negative pole is covered with the same material which forms said film.

24. A secondary battery having a negative pole substantially made of a negative pole activating material, a positive pole substantially made of a negative pole activating material disposed while interposing a separator from said negative pole and an electrolyte or an electrolytic solution (electrolytic

liquid) held between said negative pole and said positive pole, said secondary battery comprising:

at least a surface of said negative pole opposing said positive pole is treated with a reactive and gaseous material containing a nitrogen element or a halogen element.

25. A secondary battery according to claim 24, wherein said reactive and gaseous materials a plasma-type material.

26. A secondary battery according to claim 24, wherein said material containing nitrogen is one or more types of materials selected from a group consisting of nitrogen, ammonia and nitrogen trifluoride.

27. A secondary battery according to claim 24, wherein said material containing said halogen element is one or more types of materials selected from a group consisting of fluorine, chlorine, hydrogen fluoride, hydrogen chloride, nitrogen trifluoride and a carbon halide such as carbon tetrafluoride.

28. A secondary battery according to claim 24, wherein one or more types of gases selected from a group consisting of oxygen gas, hydrogen gas, argon gas, helium gas and xenon gas are added to said reactive and

gaseous raw material gas containing the nitrogen element or halogen element to treat the surface of said negative pole.

29. A secondary battery according to claim 24, wherein said reactive and gaseous material is a material in a plasma state which treats the surface of said lithium negative pole.

30. A secondary battery according to claim 24, wherein said negative pole activating material is lithium or lithium alloy.

31. A secondary battery having a negative pole substantially made of a negative pole activating material, a positive pole substantially made of a negative pole activating material disposed while interposing a separator from said negative pole and an electrolyte or an electrolytic solution (electrolytic liquid) held between said negative pole and said positive pole, said secondary battery comprising:

one or more types of layers selected from a group consisting of a conductor layer, a semiconductor layer and an insulating layer and disposed between said negative pole and said separator.

32. A secondary battery according to claim 31,

wherein said negative pole is made of lithium, lithium alloy, zinc or zinc alloy.

33. A secondary battery according to claim 31, wherein said conductor layer or said semiconductor layer is made of one or more types of elements selected from a group consisting of carbon, Ni, Ti, Pt and Si.

34. A secondary battery according to claim 31, wherein said insulating layer is one or more types of insulators selected from a group consisting of halide, nitride and carbide.

35. A secondary battery according to claim 31, wherein a layer selected from a group consisting of said conductor layer, said semiconductor layer and said insulating layer is in contact with said negative pole activating material.

36. A secondary battery according to claim 31, wherein a layer selected from a group consisting of said conductor layer, said semiconductor layer and said insulating layer is in contact with said separator.

37. A secondary battery according to claim 31, wherein a layer selected from a group consisting of said conductor layer, said semiconductor layer and said

insulating layer covers at least the surface of said negative pole activating material adjacent to said separator.

38. A secondary battery according to claim 31, wherein a layer selected from a group consisting of said conductor layer, said semiconductor layer and said insulating layer is pressed and secured to the surface of said negative pole activating material.

39. A secondary battery according to claim 31, wherein a layer selected from a group consisting of said conductor layer, said semiconductor layer and said insulating layer covers at least the surface of said separator adjacent to said negative pole.

40. A secondary battery according to claim 36, wherein a layer selected from a group consisting of said conductor layer, said semiconductor layer and said insulating layer is pressed and secured to said separator.

41. A secondary battery according to claim 31, wherein said conductor layer is made of carbon fiber having a specific area of 10 m^2/g and a void ratio of 50 % or more.

42. A secondary battery having a negative pole made of a negative pole activating material and a positive pole made of a positive pole activating material and arranged in such a manner that said negative pole activating material and said positive pole activating material are separated from each other by a separator, said secondary battery comprising:

at least a multi-layer metal oxide formed between said positive pole and said negative pole.

43. A secondary battery according to claim 42, wherein said multi-layer metal oxide contains one or more types of materials selected from a group consisting of alumina, titanium oxide, silica, selium oxide, zirconia oxide, magnesium oxide, chrome oxide, calcium oxide, tin oxide, indium oxide and germanium oxide.

44. A secondary battery according to claim 42, wherein said multi-layer metal oxide is formed by a mold made of bimolecular film.

45. A secondary battery according to claim 44, wherein said bimolecular film is a compound (a amphipathic material) having both hydrophobic group and a hydrophilic group.

46. A secondary battery according to claim 44,

wherein said bimolecular film is formed in a film shape combining an amphipathic material and a polymer compound.

47. A secondary battery according to claim 44, wherein said bimolecular film is a reactant (polyion complex) of an ionic amphipathic material and a polymer electrolyte.

48. A secondary battery according to claim 42, wherein said multi-layer metal oxide is a composite of an organic polymer.

49. A secondary battery according to claim 42, wherein said multi-layer metal oxide is a portion of said separator.

50. A secondary battery according to claim 42, wherein the surface of said positive pole made of said positive pole activating material and opposing said negative pole is covered with at least a film through which ions relating to battery reactions are able to pass.

51. A secondary battery according to claim 42, wherein the surface of said negative pole made of said negative pole activating material and opposing said

positive pole is covered with at least a film through which ions relating to battery reactions are able to pass.

52. A secondary battery according to claim 42, wherein said film through which the ions relating to the battery reactions are able to pass is made of a multi-layer metal oxide prepared in a mold made of a bimolecular film.

53. A secondary battery according to claim 42, wherein said negative pole activating material is lithium or lithium alloy.

54. A secondary battery according to claim 42, wherein said negative pole activating material is zinc or zinc alloy.

55. A secondary battery according to claim 42, wherein said multi-layer metal oxide is subjected to lipophilic treatment.

56. A secondary battery according to claim 42, wherein said multi-layer metal oxide has a conductor member on the surface thereof which opposes said negative pole.

57. A secondary battery comprising:

a negative pole substantially made of a negative pole activating material;

a positive pole substantially made of a ~~negative~~ pole activating material disposed while interposing a separator from said negative pole; and

an electrolyte or an electrolytic solution (electrolytic liquid) held between said negative pole and said positive pole, wherein

at least the surface of said positive pole opposing said negative pole is covered with one or more layers selected from a group consisting of an insulating film, a semiconductor film and a composite film of an insulating material and a semiconductor through which ions relating to battery reactions are able to pass.

58. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is a large ring compound through which the ions relating to the battery reactions are able to pass.

59. A secondary battery according to claim 58, wherein said large ring compound is a ring compound having one or more types of structures selected from a group consisting of a ring polyether, a ring polyamine, ring polythioether, azacrown ether, ring thioether,

thiocrown ether, cryptand, cyclam, cyclodextrin, cyclofan, phthalocyanin and porphyrin compound.

60. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is a polymer of a derivative of an aromatic hydrocarbon.

61. A secondary battery according to claim 60, wherein said derivative of the aromatic hydrocarbon is one or more types of derivatives selected from a group consisting of naphthalene, anthracene, phenanthlene, naphthacene, pyrene, triphenylene, perillene, picene, benzopyrene, coronene and ovalene.

62. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is fluororesin.

63. A secondary battery according to claim 62, wherein said fluororesin has an ether bond.

64. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is silicone resin which is an organic silicon compound.

65. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is a titanium polymer which is an organic titanium compound.

66. A seconary battery according to claim 57, wherein said insulating member through which the ions are able to pass is a polymer in which phosphorus atoms and nitrogen atoms alternately form phosphorus-nitrogen double bonds.

67. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is inorganic glass mainly composed of an inorganic oxide.

68. A secondary battery according to claim 67, wherein said inorganic glass is combined with an organic polymer.

69. A secondary battery according to claim 67, wherein said inorganic oxide contains oxides of one or more elements selected from a group consisting of silicon, titanium, aluminum, magnesium, zirconium, lead and calcium.

70. A secondary battery according to claim 57,

wherein said insulating member through which the ions are able to pass is a carbide.

71. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is a nitride.

72. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass is a halide.

73. A secondary battery according to claim 72, wherein said halide is a fluoride.

74. A secondary battery according to claim 57, wherein said insulating member through which the ions are able to pass contains one or more types of elements selected from a group consisting of carbon and silicon.

75. A secondary battery according to claim 57, wherein the surface of said negative pole is covered with a film through which ions relating to battery reactions are able to pass.

76. A secondary battery according to claim 57, wherein said negative pole is made of lithium or lithium alloy and said ions relating to the reactions are

lithium ions.

77. A secondary battery according to claim 57, wherein said negative pole is made of zinc or zinc alloy and said ions relating to the reactions are hydroxide ions.

78. A secondary battery comprising:

a negative pole substantially made of a negative pole activating material;

a positive pole substantially made of a ~~negative~~ pole activating material disposed while interposing a separator from said negative pole; and

an electrolyte or an electrolytic solution (electrolytic liquid) held between said negative pole and said positive pole, wherein

said positive pole activating material is mainly composed of a compound of one or more types of transition metal having a crystal grain size of 500 Å or less and a group 6A element.

79. A secondary battery according to claim 78, wherein said positive pole activating material is an aggregate selected from a group consisting of amorphous, microcrystal, a mixture of amorphous and microcrystal and a mixture of amorphous, microcrystal and multi-crystal.

80. A secondary battery according to claim 78, wherein said positive pole activating material contains hydrogen.

81. A secondary battery according to claim 80, wherein said positive pole activating material has a hydroxide.

82. A secondary battery according to claim 78, wherein said positive pole activating material contains one or more types of elements selected from a group consisting of lithium, carbon, magnesium, sodium, potassium, nitrogen, aluminum, calcium, barium, lead, indium, boron, silicon, tin, phosphorus, arsenic, antimony, bismuth, fluorine and chlorine.

83. A secondary battery according to claim 78, wherein said group 6A element which is the main component of said positive pole activating material is oxygen.

84. A secondary battery according to claim 78, wherein said group 6A element which is the main component of said positive pole activating material is sulfur.

85. A secondary battery according to claim 78, wherein said positive pole activating material is applied with coating treatment with a conductor.

86. A secondary battery according to claim 78, wherein a positive pole activating material of a type in which conductor powder serving as the core is covered with a compound of said transition metal and said group 6A element is used.

87. A secondary battery according to claim 78, wherein said positive pole activating material contains one or more materials selected from a group consisting of carbon material, a resin material and a metal material mixed thereto to form a positive pole.

88. A secondary battery according to claim 78, wherein said positive pole activating material is subjected to lipophilic treatment.

89. A secondary battery according to claim 88, wherein said lipophilic treatment is treatment using an organic metal compound.

90. A secondary battery according to claim 87, wherein said resin material contains one or more types of resins selected from a group consisting of fluororesin, polyethylene, polypropylene and silicon resin.

91. A secondary battery according to claim 90,

wherein said resin material is a resin in the form of liquid or molten liquid or a resin having a low melting point.

92. A secondary battery according to claim 91, wherein said resin is fluororesin having an ether bond.

93. A secondary battery according to claim 78, wherein said negative pole activating material is composed of one or more types of materials selected from a group consisting of lithium, lithium alloy and carbon.

94. A secondary battery according to claim 78, wherein the surface of said negative pole activating material of said secondary battery is covered with a film through which lithium ions are able to pass.

95. A secondary battery according to claim 78, wherein said electrolyte is composed of at least an alkali metal compound.

96. A secondary battery according to claim 78, wherein said electrolyte is in a state selected from a group consisting of a solid state, a molten liquid state dissolved in a non-water-soluble solvent and a solid-liquid state.

97. A method of manufacturing a positive pole activating material of a secondary battery, said method comprising the steps of:

forming a compound having a crystal grain size of 500 Å or less and composed of transition metal and a group 6A element by using a reaction selected from a group consisting of a solution reaction, a gas phase reaction and a melting and rapid cooling reaction.

98. A method of manufacturing a positive pole activating material according to claim 97, wherein said compound of said transition metal and said group 6A element is an aggregate selected from a group consisting of amorphous, microcrystal, a mixture of amorphous and microcrystal and a mixture of amorphous, microcrystal and multi-crystal.

99. A method of manufacturing a positive pole activating material according to claim 97, wherein said positive pole activating material is substantially composed of a compound of said transition metal and said group 6A element, the raw material of said transition metal element of said compound of said transition metal and said group 6A element being one or more types of materials selected from a group consisting of said transition metal, salt of said transition metal, an organic metal compound of said transition metal, hydride

of said transition metal, hydrogated material of said transition metal, carbonyl compound of said transition metal and a transition metal oxide.

100. A method of manufacturing a positive pole activating material according to claim 97, wherein said positive pole activating material is composed of a compound of said transition metal and said group 6A element, the raw material of said group 6A element of said compound of said transition metal and said group 6A element being one or more types of materials selected from a group consisting of water, alcohol, hydride, hydrogated material and halide.

101. A method of manufacturing a positive pole activating material according to claim 97, wherein said group 6A element is oxygen.

102. A method of manufacturing a positive pole activating material according to claim 97, wherein said group 6A element is sulfur.

103. A method of manufacturing a positive pole activating material according to claim 97, wherein said process for forming said compound of said transition metal and said group 6A element includes a process for causing hydrogen to react.

104. A method of manufacturing a positive pole activating material according to claim 97, wherein said positive pole activating material is composed of a compound of said transition metal and said group 6A element and said solution reaction includes at least a process for forming a hydroxide of said transition metal by using one or more reactions selected from a group consisting of a reaction between a salt of said transition metal and alkali, a hydrolysis reaction of an organic transition metal compound and a reaction between said transition metal and alkali.

105. A method of manufacturing a positive pole activating material according to claim 97, wherein said gas phase reaction includes at least a process for causing gasified transition metal salt or an organic transition metal compound or vapor of said transition metal and said group 6A element or a compound of said group 6A element to react with each other in a gas phase or a process for decomposing transition metal salt containing gasified group 6A element or an organic transition metal compound in a gas phase so that said compound of said transition metal and said group 6A element is prepared.

106. A method of manufacturing a positive pole activating material according to claim 97, wherein said

activating material is composed of a compound of said transition metal and said group 6A element and said melting and rapid cooling reaction includes at least a process for melting one or more types of materials selected from a group consisting of said transition metal and said transition metal compound to be caused to react with one or more types of materials selected from a group 6A element and said group 6A element compound and rapidly cooling said reactant.

107. A method of manufacturing a positive pole activating material according to claim 97, wherein said positive pole activating material is composed of said transition metal and said group 6A element and at least of a process for applying supersonic vibrations is provided.

108. A method of manufacturing a positive pole activating material according to claim 99, wherein said salt of said transition metal is one or more types of salts selected from a group consisting of nitrate, carbonate, sulfate, halide, phosphate, borate, salt of organic acid and ammonia salt.

109. A method of manufacturing a positive pole activating material according to claim 99, wherein said organic transition metal compound is one or more types

of salts selected from a group consisting of metal alkoxide, acetylacetonate, salt of octylic acid and naphthenate.

110. A method of manufacturing a positive pole activating material according to claim 104, wherein acid and/or alkali is added in said hydrolysis reaction of said organic transition metal compound.

111. A method of manufacturing a positive pole activating material according to claim 104 further comprising a dehydrating reaction process.

112. A method of manufacturing a positive pole activating material according to claim 104 further comprising a process for causing hydrogen sulfide to react.

113. A method of manufacturing a positive pole activating material according to claim 105, wherein a solid transition metal salt or a organic transition metal compound is heated to be formed into vapor or heated to be liquid and a carrier gas is bubbled as to be introduced into a reaction chamber or a solution dissolved in a solvent is introduced into said reaction chamber while bubbling said carrier gas so that a gas phase reaction is caused to take place.

114. A method of manufacturing a positive pole activating material according to claim 105, wherein said liquid transition metal salt or said organic transition metal compound is heated to be formed into vapor or carrier gas is bubbled to be introduced into a reaction chamber so that a gas phase reaction is caused to take place.

115. A method of manufacturing a positive pole activating material according to claim 106, wherein a rapid cooling rate is 10^1 to 10^8 K per second.

116. A method of manufacturing a positive pole activating material according to claim 97 and made of a compound of said transition metal and said group 6A element further comprising at least a step of adding one or more types of elements selected from a group consisting of lithium, carbon, magnesium, sodium, potassium, nitrogen, aluminum, calcium, barium, lead, indium, boron, silicon, tin, phosphorus, antimony, bismuth, fluorine and chlorine.

117. A method of manufacturing a positive pole activating material according to claim 116, wherein the raw material of the additive elements to be added to said positive pole activating material is one or more types of materials selected from a group consisting of

said additive element, salt of said additive element, organic compound of said additive element, hydride of said additive element and hydrogated material of said additive element.

118. A method of manufacturing a positive pole activating material according to claim 97 further comprising a step of mixing conductor powder to be used as the core of said compound of said transition metal and said group 6A element.

119. A method of manufacturing a positive pole activating material according to claim 97 further comprising a step of covering by using a conductor after said compound of said transition metal and said group 6A element has been prepared.

120. A method of manufacturing a positive pole comprising the step of:

mixing one or more types or resins selected from a group consisting of fluorine resin, polyethylene, polypropylene and silicon resin into said positive pole activating material prepared by said manufacturing method according to claim 97.

121. A method of manufacturing a positive pole according to claim 120, wherein said resin material is

liquid or solution or low melting point resin.

122. A method of manufacturing a positive pole according to claim 120, wherein said resin material is fluorine resin having an ether bond.

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